:56 minutes of each hour, and broadcasts a country music format. The test PSAs were 30 seconds in length each, and occurred 2 to 3 times per hour depending on spot availability.

Preliminary testing occurred on 11/15/2011 to 12/01/2011 to determine appropriate test locations and drive distances between test locations. It is important to mention that 10 minutes to 30 minutes elapsed between spots, so drive distances had to be determined- typically 5-10 miles apart, and compensated by roads, construction delays, and alternate routes for high traffic or accidents. A typical test location was in an empty field or parking lot with no close obstructions.

The submitted audio clips were recorded in the field on 12/2/2011 to 12/22/2011. Audio information was collected at 20 geographical locations as described in this report. At each of the 20 test locations, a measurement of the Non-Targeted, normal simulcast audio was made for a PSA spots that occurred in rotation. These PSA spots are used as a comparative reference to the Targeted PSA spot. For the targeted-test mode, a distinct spot was broadcast on each booster. These spots were in simulcast synchronization mode, as was the reference PSA spots. When the PSA spots were not being recorded the booster transmitter PAs were muted. The goal was to monitor and analyze the audio at the 20 test locations for quality of reception as compared to the Non-Targeted PSA spot.

At each of the 20 measured locations, each audio file attached with this report has the following format:

-Approximately 125 seconds in length.

-30 seconds of WWOJ non-simulcast audio before the Simulcast (same content) spot, the 30 second Simulcast (same content) spot, and then 30 seconds of WWOJ audio after the Simulcast (same content) spot. Note this spot varies, one of 21 different PSAs that rotated.

-5 seconds of silence.

-30 seconds of WWOJ audio before the Targeted (different content reference) spot, the 30 second Targeted (different content reference) spot, 30 seconds of WWOJ audio after the Targeted (different content reference) spot. Also note that areas marked with (WWOJ) mean that the main WWOJ transmitter captured the receiver at that test point, so that the reference spot cannot be heard.

This format allows the listener to easily compare subjectively the Simulcast (same content) spot audio to the Targeted (different content reference) spot.

NON TARGETED (SIMULCAST) PSA AUDIO SPOT

As mentioned, at each of the 20 test locations a measurement of the Non-Targeted simulcast audio were made for a one of the 21 PSA spots in rotation, as shown in Figure 21:

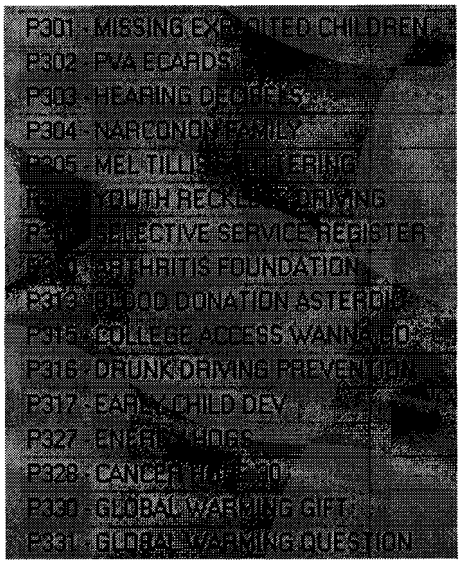

Figure 21: Rotated Reference Simulcast PSA Spots

TARGETED (NON-SIMULCAST) PSA AUDIO SPOTS

For the targeted-test mode, a distinct PSA spot was simulcast on the each of the three boosters. This spot was simulcast at the same time the main WWOJ (FM) was playing a different PSA spot. The goal was to monitor and analyze the audio at the 20 test locations for quality of reception as compared to the non-targeted PSA spot. The spot used with 30 seconds in length and titled "Living Healthy and Green-USEARADON" described the dangers of Radon gas.

OBJECTIVE AUDIO ANALYSIS FOR NON-TARGETED/TARGETED SPOTS RESULTS

The measurement receiver and collection software, GoldenEar™ developed by WorldCast Systems.com/Audemat division, is described in other sections. The GoldenEar™ software is meant to provide a numerical method for quantifying a pure subjective concept, which is quality of received FM audio. As the method is a numerical one, it will be applied every time the same way, therefore it is an objective measure, as opposed to having numerous subjects listen and evaluate the audio.

The GoldenEar™ quality algorithm uses measured data to form a quality rating, ranging from 1 to 5, 5 being the best and 1 being the worst. An indication of the grading scale algorithm is intended to be analogous to ITU-R (BS.1284-1) [3] recommendations. The following five-grade

[3] RECOMMENDATION ITU-R BS.1284-1*General methods for the subjective assessment of sound quality

scale is appropriate for the assessment of sound quality and impairment for the grading of the WWOJ (FM) test audio samples which is specified by the ITU-R recommendations.

Quality		Impairment	
5	Excellent	5	Imperceptible
4	Good	4	Perceptible, but not annoying
3	Fair	3	Slightly annoying
2	Poor	2	Annoying
1	Bad	1	Very annoying

Table Four: ITU-R Grading Scales

For comparison tests, the following ITU-R comparison scale is based on numerical differences using the above five-grade scales for the purposes of comparing the Non-Targeted PSA reference spot to the Targeted PSA spots.

Comparison	
3	Much better
2	Better
1	Slightly better
0	The same
–1	Slightly worse
–2	Worse
–3	Much worse

Table Five: ITU-R Comparison Scales

As indicated in Table Six, the Non-Targeted Simulcast PSA spots had an objective quality range of 3.30 to 4.90, with a 20 location average of 4.08. The Targeted PSA spot had an objective quality range of 3.63 to 4.90, with a 20 location average of 4.06. The difference between the two averages is 0.02, with the Non-Targeted result being less than a Slightly Better rating when compared to the Targeted results as indicated in Table x.

	RELATIVE FIELD LEVEL (dBμV/m)	SAME PSA AUDEMAT QUALITY INDEX	TARGETED PSA AUDEMAT QUALITY INDEX
SAMPLE 1	41.07	3.63	3.86
SAMPLE 2	111.73	4.10	4.00
SAMPLE 3	80.63	3.60	3.63
SAMPLE 4	71.67	4.00	4.10
SAMPLE 5	65.27	4.00	4.00
SAMPLE 6	61.97	4.23	4.53
SAMPLE 7	51.70	3.30	3.63
SAMPLE 8	88.69	3.70	3.76
SAMPLE 9	63.51	3.90	3.92
SAMPLE 10	55.00	4.00	4.00
SAMPLE 11	69.00	4.20	4.00
SAMPLE 12	77.03	4.00	4.00
SAMPLE 13	70.57	4.00	4.00
SAMPLE 14	62.03	4.53	4.00
SAMPLE 15	61.10	3.80	3.78
SAMPLE 16	70.00	4.55	4.25
SAMPLE 17	66.72	4.10	4.00
SAMPLE 18	53.77	4.87	4.73
SAMPLE 19	56.24	4.28	4.10
SAMPLE 20	68.40	4.90	4.90
AVERAGE	**67.30**	**4.08**	**4.06**

Table Six: Objective Audio Test Results

Based on the fact that that all PSA spots were completely perceptible, it is concluded that the implementation of the Lazer Spots™ Targeted messaging test was shown to be extremely successful- it is believed that it could acceptably be implemented commercially.

APPENDIX ONE: AUDEMAT FM-MC4 CALIBRATION DATA

On September 8, 2010 the Audemat FM-MC4™, antenna and RF cable were sent to the Audemat Lab in Paris for calibration. Some of the calibration data is shown below.

ANTENNA CALIBRATION

This window displays antenna response curve to be displayed as well as different loss and gain values to be taken into account for calculating the field level's real value from the raw value supplied by the measuring equipment during station acquisition.

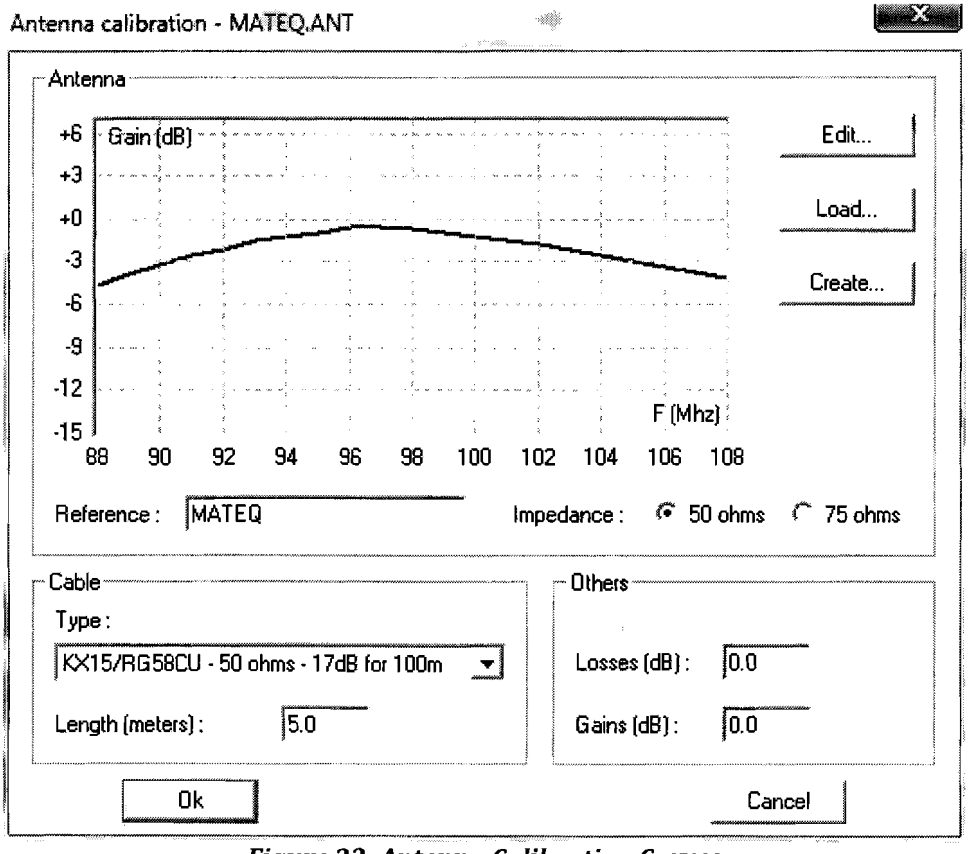

Figure 22: Antenna Calibration Curves

RECEIVER CALIBRATION

This window displays the receiver's response curve of the FM-MC4™ equipment used. The window displays the curves corresponding to different frequencies for which the equipment has

been calibrated. These values are in the receiver calibration file which is loaded when the program is launched. This file is supplied with the equipment or when recalibrated in the factory.

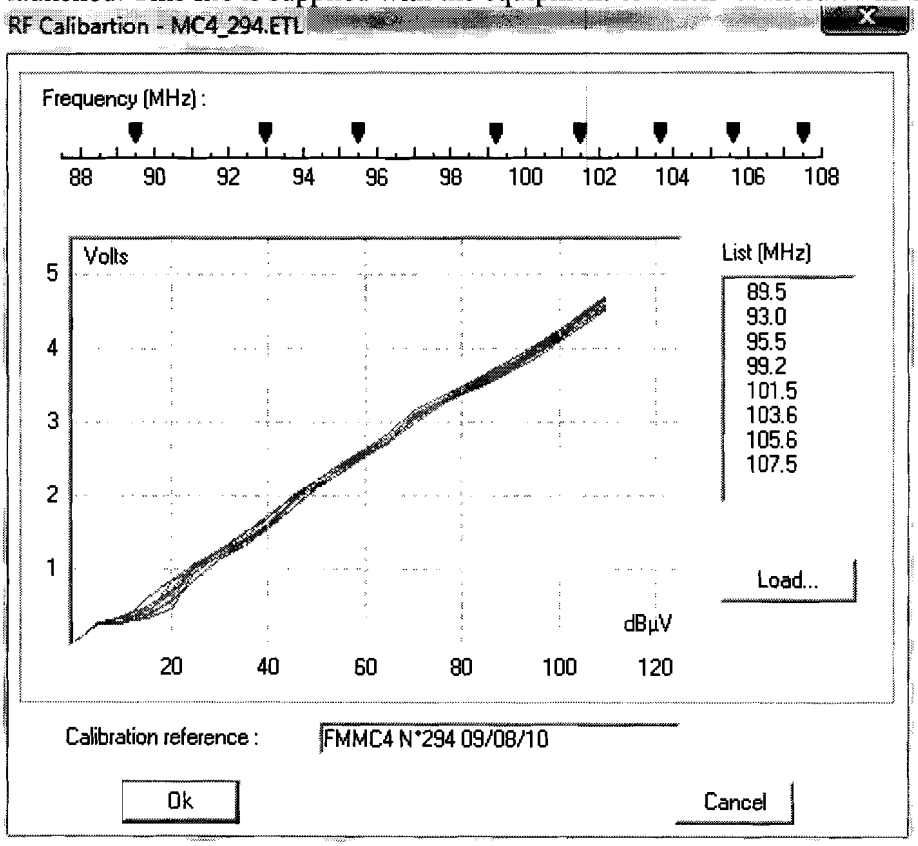

Figure 23: RF Receiver Calibration Curves

APPENDIX TWO: REFERENCE STANDARDS RELEVANT TO THIS REPORT

FCC AUDIO DIVISION

http://www.fcc.gov/mb/audio/

The Media Bureau licenses commercial and noncommercial educational AM, FM, FM Translator, and FM Booster radio services, and also the noncommercial educational Low Power FM radio service. The Division provides legal analysis of broadcast, technical and engineering radio filings and recommends appropriate disposition of applications, requests for waivers, and other pleadings. Telecommunications falls under **Title 47** of the CFR. AM, FM, and TV broadcast stations fall under **Part 73 and 74** of Title 47.

INTERNATIONAL TELECOMMUNICATIONS UNION (ITU)

ITU Radiocommunication Sector

http://www.itu.int/ITU-R/index.html

ITU-R BS.1114-5: Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3,000 MHz

ITU-R BS.412-9 17, ANNEX 3: Protection ratio for FM sound broadcasting in the case of the same programme and synchronized signals

ITU-R BS.1387-1: Method for objective measurements of perceived audio quality

ITU-R BS.1284-1 General methods for the subjective assessment of sound quality

WORLDCAST SYSTEMS / AUDEMAT DIVISION MENTION REFERENCES

http://worldcastsystems.com/

CCIR [Recommendation 638] : Terms and definitions used in planning frequencies for audio and television Broadcasting – Protection ratio in Audio Frequency

CCIR [Recommendation 559-2] : Objective measuring of RF protection ratios in broadcasting – parameters taken into consideration

CCIR [Recommendation 559-2] : Objective measuring of RF protection ratios in broadcasting – Standardised noise spectrum – Colored noise signal used for generator modulation

CCIR [Recommendation 641] : Determining RF protection ratios in audio broadcasting at frequency modulation –Appendix 1 – Maximum deviation of measurement generator frequency

IUT-R [Recommendation BS.450-2] : Transmission standards for audio broadcasting at frequency modulation in metric waves

IUT-R [Recommendation 412-6] : Planning standards for audio broadcasting at frequency modulation in metric waves – Note 4 – Sinusoid signal power

IUT-R [Recommendation 412-7] : Planning standards for audio broadcasting at frequency modulation in metric waves – Appendix 4 – Measuring complete multiplex signal power and peak deviation of an FM audio broadcasting signal

IUT-R [Recommendation 642-1] : Limiters for high quality radio-phonic program signals AFNOR 97330 :Weighting curve representing average musical messages

CEPT/ERC : [Recommendation ERC 54-01 E] – Method of measuring the maximum frequency deviation of FM Broadcast emissions in the band 87,5 MHz to 108 MHz at monitoring stations

UIT-R [Recommendation 704] : Characteristics of reference receivers in audio broadcasting at frequency modulation, at end of planning

UIT-R [Recommendation 599] : Audio broadcasting reception antenna directivity

APPENDIX THREE: FCC EXPERIMENTAL AUTHORIZATION

FEDERAL COMMUNICATIONS COMMISSION
445 TWELFTH STREET SW
WASHINGTON DC 20554

MEDIA BUREAU
AUDIO DIVISION
APPLICATION STATUS (202) 418-2730
HOME PAGE: www.fcc.gov/mb/audio/

ENGINEER: CHARLES N. (NORM) MILLER
TELEPHONE (202) 418-2767
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E-MAIL: charles.miller@fcc.gov

September 28, 2011

Aaron P. Shainis, Esq.
Shainis & Peltzman, Chartered
1850 M Street, NW, Suite 240
Washington, DC 20036

In re: Cohan Radio Group, Inc.
WWOJ (FM), Avon Park, Florida
Facility Identification Number: 27199
Application for Experimental Authorization

Dear Counsel:

The staff has before it a request for an Experimental Authorization, filed July 19, 2011, and supplemented on September 22, 2011, on behalf of Cohan Radio Group, Inc. ("Cohan"), licensee of Station WWOJ(FM), Avon Park, Florida.[1] Cohan proposes to conduct experimental operations to determine the feasibility of broadcasting independent, targeted messages on FM Booster stations. Cohan proposes to construct three temporary FM Booster facilities and to broadcast noncommercial announcements on the booster stations while simultaneously broadcasting different programming on the main station. Cohan proposes to use proprietary technology provided by Lazer Spots, LLC, which will allow different announcements to be placed on the boosters in a synchronized time sequence. Other than the foregoing, no changes to the authorized technical facilities are contemplated. Cohan states that the experimental broadcasts will be conducted over a 60-day period.

Our review indicates that the proposed experimental operation meets the requirements of Section 73.1510 of the Commission's rules and that the proposed experimental operation is not likely to result in interference to any other station. Although some intrasystem interference is to be expected from the experimental operation, we believe that Cohan will act in its own self-interest to minimize any detrimental effect on its listeners. We find that the Public Interest would be served through the collection of data on the feasibility of transmitting independent, targeted announcements on FM Boosters, which could be used in support of a Petition for Rule Making to modify the Commission's Rules to permit the use of such transmissions. We believe that, in order to provide for setup and preliminary testing of the booster facilities in addition to the proposed 60-day experimentation, a term of 120 days is appropriate.

Accordingly, the request for Experimental Authorization IS GRANTED. Station WWOJ may construct the following temporary FM Booster facilities:

[1] WWOJ is licensed for operation on Channel 256C3 (99.1 MHz), with effective radiated power of 10 kilowatts (H&V) and antenna height above average terrain of 157 meters.

1.	Booster location:	Zolfo Springs, Florida
	Geographic coordinates:	27° 21' 59" N, 81° 47' 52" W (NAD 1927)
	Channel	256 (99.1 MHz)
	Effective radiated power:	Not to exceed 5 kilowatts (Max-DA, V only)
	Antenna type:	Composite array, Four Aldena, model ALP.08.02.712 log periodic antennas, 2 x 2 stack, directional
	Antenna orientation:	0° True
	Antenna height:	
	above ground:	64 meters
	above mean sea level:	81 meters
	above average terrain:	64 meters
2.	Booster location:	Wauchula, Florida
	Geographic coordinates:	27° 29' 24" N, 81° 50' 29" W (NAD 1927)
	Channel	256 (99.1 MHz)
	Effective radiated power:	Not to exceed 5 kilowatts (Max-DA, V only)
	Antenna type:	Composite array, Four Aldena, model ALP.08.02.712 log periodic antennas, 2 x 2 stack, directional
	Antenna orientation:	12° True
	Antenna height:	
	above ground:	72 meters
	above mean sea level:	96 meters
	above average terrain:	72 meters
3.	Booster location:	Frostproof, Florida
	Geographic coordinates:	27° 42' 41" N, 81° 33' 04" W (NAD 1927)
	Channel	256 (99.1 MHz)
	Effective radiated power:	Not to exceed 5 kilowatts (Max-DA, V only)
	Antenna type:	Composite array, Four Aldena, model ALP.08.02.712 log periodic antennas, 2 x 2 stack, directional
	Antenna orientation:	13° True
	Antenna height:	
	above ground:	38 meters
	above mean sea level:	76 meters
	above average terrain:	38 meters

During the 60 day test period, Cohan may transmit independent, noncommercial announcements on the temporary FM Booster Stations as described above. Limited waiver of 47 C.F.R. Section 74.1231(h) is granted to the extent necessary for the proposed experimentation. Cohan shall employ whatever means are necessary to prevent excessive exposure of workers or the public to radio frequency radiation, pursuant to Section 1.1310. Within 60 days following completion of the experimental operation authorized herein, Cohan shall file a full report of the research.